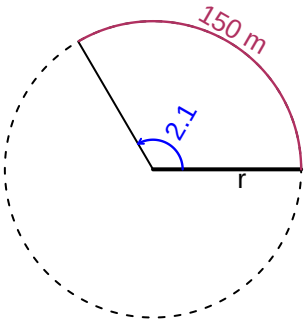
Name: Date:

Trig Final (Practice v22)

- You can use a calculator (like Desmos)
- You should have a unit-circle with special angles and coordinates marked.

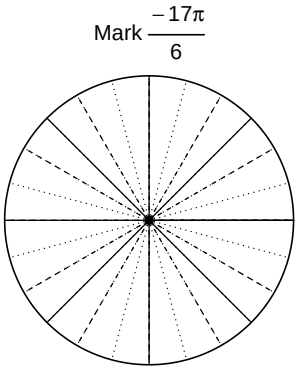
Question 1

In the figure below, we see a circle and a central angle that subtends an arc. The angle measure is 2.1 radians. The arc length is 150 meters. How long is the radius in meters?

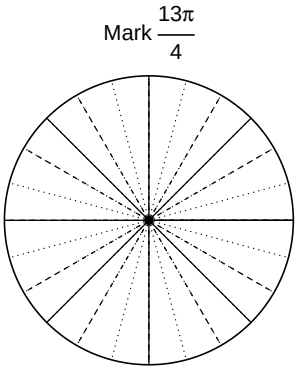


Question 2

Consider angles $\frac{-17\pi}{6}$ and $\frac{13\pi}{4}$. For each angle, use a spiral with an arrow head to **mark** the angle on a circle below in standard position. Then, find **exact** expressions for $\sin\left(\frac{-17\pi}{6}\right)$ and $\cos\left(\frac{13\pi}{4}\right)$ by using a unit circle (provided separately).



Find $\sin(-17\pi/6)$



Find $\cos(13\pi/4)$

Question 3

If $\sin(\theta) = \frac{-35}{37}$, and θ is in quadrant IV, determine an exact value for $\cos(\theta)$.

Question 4

A mass-spring system oscillates vertically with an amplitude of 4 meters, a midline at $y = 6.71$ meters, and a frequency of 7.76 Hz. At $t = 0$, the mass is at the midline and moving up. Write an equation to model the height (y in meters) as a function of time (t in seconds).